

MAY 15 1928

28,898

TRANSACTIONS

OF THE

SAN DIEGO SOCIETY OF NATURAL HISTORY

VOLUME V, No. 12, pp. 195-202, plate 24

A NEW ECHINOID FROM THE  
CALIFORNIA EOCENE

BY

HUBERT G. SCHENCK

SAN DIEGO, CALIFORNIA

PRINTED FOR THE SOCIETY

APRIL 28, 1928

*H.*

COMMITTEE ON PUBLICATION

U. S. GRANT, IV, *Chairman*

FRED BAKER

CLINTON G. ABBOTT, *Editor*

MAY 15 1928

## A NEW ECHINOID FROM THE CALIFORNIA EOCENE

BY

HUBERT G. SCHENCK

### INTRODUCTION

Specimens of fossil echini were collected by members of the Stanford Geological Survey from the Eocene rocks on the south side of Santa Paula Peak, Ventura County, California, during the preparation of a geologic map of the United States Geological Survey Santa Paula Quadrangle. The specimens were first submitted to Dr. William S. W. Kew, of Los Angeles, who recognized that they belong to a species not included in his monograph (1920)<sup>1</sup> nor in the subsequent paper by Israelsky (1923). The material was later sent for examination to Dr. Hubert Lyman Clark, of the Museum of Comparative Zoology, Cambridge, Massachusetts, and he assures me that there is no doubt that the specimens represent an undescribed species, apparently of the genus *Spatangus*. He has given me full permission to use his notes concerning the distinguishing features of the species. The recognition of this new species may aid in correlations, both local and interregional (Stefanini, 1924), and the presence of the fossils in this formation should be of assistance in interpreting conditions of sedimentation, since the echini are stenohaline marine forms, and the species of *Spatangus* living off southern California has a bathymetric range of 45 to 73 fathoms, with extremes of temperature from 56.5° to 52.4° F., according to Clark (1917, p. 236), who has also remarked that no species of the genus occurs in the Recent faunas of the West Indies, Panamic region, nor the American coast north of California. The living representatives occur chiefly in the shallow waters of the northern hemisphere, extending southward in the eastern Atlantic to the Cape of Good Hope region (Clark, 1917, p. 233).

### OCCURRENCE

The specimens occur in an indurated greenish sandstone designated a "quartzite" by Eldridge and Arnold (1907). Microscopic examina-

---

<sup>1</sup>The dates in parentheses refer to the papers cited in the accompanying bibliographic references, page 201.

tion of the rock discloses an abundance of quartz, feldspar, and chlorite occurring as closely compacted small grains with a non-calcareous cement. The light-colored, irregularly spaced areas that give a mottled appearance to the sandstone may be chiefly due to weathering. Characteristic Tejon Eocene molluscan fossils, including *Turritella usasana* Conrad, *Glycimeris sagittata* (Gabb), and *Meretrix hornii* (Gabb), have been obtained from the formation, which is the basal stratigraphic unit of the Tejon Group in this part of the Santa Ynez Range. The figured specimens were collected by two student-geologists of the Stanford Geological Survey, Messrs. John W. Bean and James W. Wilt, from Timber Canyon, at an elevation of about 3,500 feet, in the northeast quarter of Section 18, Township 4 North, Range 20 West, San Bernardino Base Line. The geologic features of the region are shown in the maps accompanying the reports of Eldridge and Arnold (1907) and Kew (1924), and a detailed map of the immediate locality is in the course of preparation by Paul F. Kerr and the writer.

#### DESCRIPTION OF SPECIES

##### *Spatangus tapinus*, sp. nov.

Plate 24, figs. 1, 2, 3, 4

Holotype No. 52, type collection, San Diego Society of Natural History; S.D.S.N.H. locality No. 261 (equals L.S.J.U. locality No. 261).

Paratype No. 482, type collection, Leland Stanford Junior University; L.S.J.U. locality No. 277.

Test strongly cordiform (Plate 24, fig. 4); apical system central; upper surface arched, lower surface flat (Plate 24, fig. 3). Petals I and V are 17 mm. long and 8 mm. wide, blunt, and closed at tip; interporiferous area scarcely wider than one of the poriferous; sides almost parallel for most of the length. Petals II and IV 22 mm. long and 6 mm. wide, at first moderately, then abruptly and strongly divergent, bending forward again slightly near tip, and with the adaptal portion quite narrow. Ambulacrum III about 3.5 mm. wide, with distinct, well-spaced pore-pairs; depressed about 4 mm. at ambitus. Interambulacra 1 and 4 each with 25 to 30 conspicuous primary tubercles, as shown by paratype but not visible in the holotype. Interambulacra 2 and 3 with more than a dozen similar tubercles. Distal to the petal tips in ambulacra II and IV are some small primaries. There seem to be no large

primary tubercles in interambulacrum 5, but there may be some small ones. Genital pores probably 4, but not certainly determinable. There is no peripetalous, and no internal, fasciole. As the holotype is a cast of the interior of the test and the paratype is a mold of the exterior dorsal surface only, no subanal fasciole is visible, the ventral surface not being exposed. *Measurements*.—Length, 48 mm.; width, 44 mm.; height, 10 mm.

*Remarks*.—This distinctive species is quite different from other American fossil echini, but seems to be rather closely related to some Recent species of the genus *Spatangus*, the characteristics of which are clearly defined by Loriol (1875) and Duncan (1891).<sup>2</sup> However, preservation of the fossil prevents determining whether a subanal fasciole is present and consequently a positive generic assignment is impossible. Nevertheless, there is no other genus to which it may more naturally be referred.

The new species has no particular affinity to *S. pachecoensis* Pack,<sup>3</sup> the generic position of which is dubious. It is larger than *pachecoensis*, differs in convexity, character of petals, and other features. From all of the Recent species of *Spatangus*, as described and figured by Clark (1917) the present species is easily distinguished by the depressed test (hence the name, ταπεινός, meaning "low"), the form of the petals, and the distribution of the primary tubercles. The living *S. californicus* Clark is figured on Plate 24, figure 5, for comparison with the Eocene species.

<sup>2</sup>The genotype, according to H. L. Clark (1917, pp. 233-34), is *Spatangus purpureus* O. F. Müller (Zool. Dan. Prod. 1776, p. 236). Clark remarks that "there seems to be no doubt that in the first post-Linnean use of this generic name, it was spelled without the *n*, conforming to Linné's specific name in *Echinus spatagus*. But since such spelling is etymologically incorrect and has been avoided by all subsequent writers, it would be highly objectionable to revive it, and I therefore treat Müller's early spelling as a slip of the pen."

<sup>3</sup>Described and figured by Pack (1909, p. 276, Pl. 23, figs. 4 and 5). Better material is figured by Kew (1920, p. 155, Pl. 42, figs. 4a, 4b, 4c, and 4 d). The species is discussed by Clark and Twitchell (1915, p. 156).

## PLATE 24

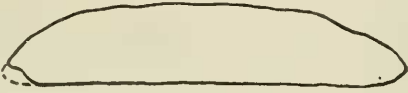
- Fig. 1. *Spatangus tapinus* Schenck, sp. nov.  
Approximately natural size. Holotype No. 52, S.D.S.N.H. type collection, from the S.D.S.N.H. and L.S.J.U. locality 261. Collected in Timber Canyon in the NE $\frac{1}{4}$  of Sec. 18, T. 4 N., R. 20 W., San Bernardino Baseline, Santa Paula quadrangle, Ventura County, California. Tejon formation, upper Eocene.
- Fig. 2. *Spatangus tapinus* Schenck, sp. nov.  
Approximately natural size. Paratype No. 482, L.S.J.U. type collection, from the L.S.J.U. locality 277. Collected from the head of Timber Canyon, Santa Paula quadrangle, Ventura County, California. Tejon formation, upper Eocene.<sup>4</sup>
- Fig. 3. *Spatangus tapinus* Schenck, sp. nov.  
Approximately natural size. Outline of the side view of the holotype, figure 1.
- Fig. 4. *Spatangus tapinus* Schenck, sp. nov.  
Approximately natural size. Top view of the holotype, figure 1.
- Fig. 5. *Spatangus californicus* Hubert Lyman Clark.  
Approximately natural size reproduction of a figure given by Clark (1917, pl. 156, fig. 3) of the living species from the California Coast.



1



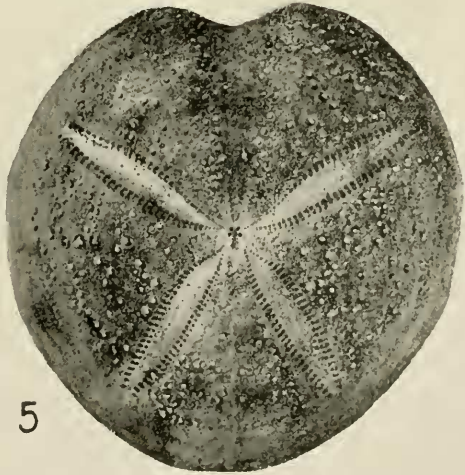
2



3



4



5